REMARKS

Favorable reconsideration of this application, in view of the present amendments and in light of the following discussion, is respectfully requested.

After entry of this amendment, Claims 1-8 are pending. Claims 1-3, 5-6 are amended and Claims 7-8 are newly added. No new matter is introduced.

In the outstanding Office Action, Claims 1-4 and 6 were rejected under 35 U.S.C. §103(a) as being unpatentable over Liu ("*AOTO: Adaptive Overlay Topology Optimization in Unstructed P2P Systems*", 04 December 2003) in further view of Chatterjee ("*A Weight Based Distributed Clustering Algorithm for Mobile ad hoc Networks*", 2000); and Claim 5 was rejected under 35 U.S.C. §103(a) as being unpatentable over Liu and Chatterjee in further view of Traversat (U.S. Patent Application Publication No. 2002/0147771, hereafter Traversat).

In reply to the rejection of Claims 1-4 and 6 as being unpatentable over the combination of Liu and Chatterjee, Claim 1 is amended to recite, *inter alia*, a node device configured to join a network formed by a first existing node and a second existing node, and including a total metric value calculator:

> wherein when calculating the first total metric value, the total metric value calculator calculates a first weighted metric value by calculating *a product of a metric value of a route to the first existing node and a first weighting coefficient indicative of a number of adjacent nodes to the first existing node*, the total metric value calculator also calculates a second weighted metric value by calculating *a product of a metric value of a route to the second existing node via the first existing node and a second weighting coefficient indicative of a number of adjacent nodes to the second existing node*, and the first total metric value is calculated as a sum of the first weighted metric value and the second weighted metric value, and
>
> when calculating the second total metric value, the total metric value calculator calculates a third weighted metric value by calculating *a product of a metric value of a route to the second existing node and the second weighting coefficient*, the total metric value calculator also calculates a fourth weighted

> metric value by calculating *a product of a metric value of a route to the first existing node via the second existing node and the first weighting coefficient*, and the second total metric value is calculated as a sum of the third weighted metric value and the fourth weighted metric value....(emphasis added).

Turning to the applied references, Liu describes an adaptive overlay topology optimization (AOTO) method used to optimize unstructured peer-to-peer networks.[1] Liu describes an overlay multicast tree in which each of the peer in the network probes its immediate logical neighbors to determine a cost of connecting to each of its logical neighbors.[2] Each peer then builds a cost table and shares the table with its immediate logical neighbors.[3] In an active topology step, Liu describes that the costs of connections are used to reorganize the network topology.[4] However, as acknowledged by the outstanding Office Action, Liu does not describe the claimed first and second weighting coefficients.[5] To remedy this deficiency, the outstanding Office Action combines Liu with Chatterjee.

Chatterjee describes a combined weight metric algorithm that takes into account several system parameters to generate node clusters in an ad hoc network.[6] More specifically, Chatterjee describes an algorithm that computes the degree difference (D_v) for each node, the sum of the distances (P_v) for every node with respect to the other nodes, the mobility (M_v) for every node, and the total time (T_v) a node has been a cluster head.[7] Chatterjee then describes that a combined weight is generated for each of node by summing each of the above-identified parameters after being respectively multiplied by a weighting factor (c_1, c_2, c_3, and c_4).[8] The node having the minimum combined weight is chosen as the new cluster head.[9]

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[1] Liu at page 4187, the paragraph beginning with "While retaining the desired..."
[2] Liu at page 4187, the paragraph beginning with the heading, "B. Selective Flooding."
[3] Liu at page 4187-4188, the paragraph under the heading, "B. Selective Flooding."
[4] Liu at page 4188, the paragraph under, "C. Active Topology."
[5] See the outstanding Office Action at page 5, the second full paragraph.
[6] Chatterjee at page 514, the last full paragraph.
[7] Chatterjee at page 515, the steps listed under, "Cluster head Election Procedure."
[8] Chatterjee at page 516, step 6.
[9] Chatterjee at page 516, step 7.

However, Chatterjee does not describe that each parameter (D_v, P_v, M_v and T_v) is multiplied by a weighing factor *indicative of a number of nodes connected to a cluster head.* Instead, Chatterjee describes that these parameters are multiplied by *fixed* weighing factors in order to emphasize a predetermined goal, such as maximizing battery power, during network optimization.[10] Conversely, amended Claim 1 recites a product of a metric value of a route to the first existing node and *a first weighting coefficient indicative of a number of adjacent nodes to the first existing node* and also recites a product of a metric value of a route to the second existing node via the first existing node and *a second weighting coefficient indicative of a number of adjacent nodes to the second existing node.* Therefore, Chatterjee fails to disclose the claimed weight values.

Moreover, Chatterjee describes the network topology as being dynamic with mobile nodes that change their connection point from one cluster head to another.[11] As such, the number of nodes connected to a cluster head does not remain fixed, but varies with node movement. However, Chatterjee requires that the weighing factors *remain fixed for a given system.*[12] Thus, Chatterjee teaches away from a first and second weighting coefficient respectively indicative of a number of adjacent nodes to the first and second existing nodes, because Chatterjee requires fixed weighing factors, but describes the number of nodes connected to a cluster head as changing with node movement. As the claimed first and second weighting coefficients are therefore not obvious from Chatterjee, no combination of Liu and Chatterjee describes every feature recited in amended Claim 1. Consequently, it is submitted that amended Claim 1, together with its corresponding dependent claims, is in condition for allowance.

Though of a different statutory class, Claim 6 recites features substantially similar to those recited in Claim 1, and is therefore in condition for allowance, together with its

[10] Chatterjee at page 516, the last paragraph bridging to page 516.
[11] Chatterjee at page 512, the first and second full paragraphs; see also the first paragraph under section 3.3.
[12] Chatterjee at the top of page 516.

corresponding dependent claims, for substantially the same reasons. Accordingly, it is respectfully requested that the rejection of Claims 1-4 and 6 under 35 U.S.C. §103(a) be withdrawn.

As the rejection of Claim 5 under 35 U.S.C. §103(a) relies upon the combination of Liu and Chatterjee for describing the above-distinguished features, and the above-distinguished features are not disclosed or suggested by the combination of Liu and Chatterjee, and are not disclosed in combination with any other art of record, Applicants respectfully submit that a *prima facie* case of obviousness has not been presented. Accordingly, Applicants respectfully request that the rejection of Claim 5 under 35 U.S.C. §103(a) be withdrawn.

In addition, new Claims 7 and 8 recite features not disclosed in any art of record, and are therefore in condition for allowance.

For the reasons discussed above, no further issues are believed to be outstanding in the present application, and the present application is believed to be in condition for formal allowance. Therefore, a notice of allowance for Claims 1-8 is earnestly solicited.

Respectfully submitted,

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